DOCKET FILE COPY ORIGINAL CC95-116

May 18, 1998

Mr. A. Richard Metzger, Jr.
Chief, Common Carrier Bureau
Federal Communications Commission
1919 M Street NW
Washington, DC 20554

Dear Mr. Metzger:

Enclosed is a copy of the *Local Number Portability Administration Working Group Report on Wireless Wireline Integration* including the *Architecture and Administration Plan for Local Number Portability*. These reports reflect many months of effort on the part of the Local Number Portability (LNP) Working Group of the North American Numbering Council (NANC) and the Wireless Wireline Integration Task Force of the LNP Working Group as well as several reviews by the NANC of the issues presented in the report. Our report also includes a document entitled *Support of Nation Wide Roaming*.

The NANC has adopted this report and is forwarding it to you as its recommendation in accordance with the directive of the Federal Communication Commission in its Second Report and Order in CC Docket No. 95-116.

Three members of the NANC voted not to accept the report, viz. GTE, OPASTCO and SBC Communications Inc. I have been instructed by these three members to indicate that their opposition is based on the tight timeframes allowed in the report for completing certain work still to be accomplished by the NANC (see particularly Section 3.3.3.3) and not on any generic disagreement with the need to implement the integration. While agreeing with the report, USTA expressed the same concern about the time allowed to complete these tasks.

Sincerely,

Alan C. Hasselwander
Chairman North American Numbering Council

Cc: Lawrence E. Strickland, Geraldine Matise, Erin Duffy, Jeannie Grimes

No. of Copies rec'd 2
List A B C D E

North American Numbering Council

Local Number Portability Administration Working Group Report on Wireless Wireline Integration

May 8, 1998

TABLE OF CONTENTS

Appendices

SECTION 1 EXECUTIVE SUMMARY

1.1 The LNPA Working Group (LNPAWG) prepared the Wireless Wireline Integration Report to address concerns regarding the implementation of number portability as delegated to the North American Numbering Council (NANC) by the Federal Communications Commission (FCC).

1.2 In the First Report and Order the Commission established rules mandating number portability for both LECs and CMRS providers. A separate time-table was established for CMRS providers, requiring them to implement service provider number portability by June 30, 1999.

1.3 Previous activities of the LNPAWG and associated Task Forces focused primarily on the wireline segment of the industry and subsequently published associated recommendations on April 25, 1997.

1.4 This report addresses the integration of LEC and CMRS provider number portability issues as well as wireless specific issues related to number portability.

1.5 In the Introduction (Section 2) the LNPAWG's responsibilities are discussed.

1.6 The activities of the Wireless Wireline Integration Task Force focused primarily on wireless wireline integration issues (Section 3). These issues included: 1.) Rate Center Issue; 2.) Request for service provider portability; and 3.) Provisioning.

1.7 Number portability has significant impacts in areas that are wireless specific. Section 4 addresses these issues including: 1.) The separation of the MIN and MDN; 2.) Roaming; 3.) Wireless E911; and 4.) Short messaging service.

1.8 Through the undertaking of the Wireless Wireline Integration Task Force, in its efforts to integrate wireless wireline processes, impacts to the existing LNP architecture were brought to light. Section 5 contains a description of the updates to the LNPA Architecture Task Force report, "Architecture & Administrative Plan for Local Number Portability". The full report, which has been updated to include CMRS provider number portability issues, is contained in Appendix C.

1.9 Section 6 contains the LNPA and Operational Requirements Task Force Report. In this section the NPAC SMS change management orders required to implement wireless number portability are detailed.

1.10   The LNPAWG Recommendations and Open Issues section (Section 7) details the recommendations developed in its efforts to integrate wireless and wireline number portability technical and operational processes. This section also identifies issues that will remain open at the submission of this report to the FCC.

1.11   Section 8 defines terms and acronyms used in the document.

SECTION 2   INTRODUCTION TO THE LNPAWG (WWITF)

2.1   **Work Directives by the FCC.**

2.1.1   On July 2, 1996, the FCC ordered all Local Exchange Carriers (LECs) to begin the phased deployment of a long term service provider Local Number Portability (LNP) method in the 100 largest Metropolitan Statistical Areas (MSAs) no later than October 1, 1997, and to complete deployment in those MSAs by December 31, 1998[1]. The FCC further concluded that public interest is served by requiring the provision of number portability by Commercial Mobile Radio Services (CMRS) providers because number portability will promote competition between providers of local telephone service[2]. Number portability is ordered when switching among wireline service providers as well as among broadband CMRS providers, even if the broadband CMRS and wireline service providers or the two (2) broadband CMRS providers are affiliated[3]. The FCC recognized that the wireline industry had already begun to develop the processes and systems necessary to provide number portability while the CMRS carriers had only begun to address number portability. Therefore, the LNP Order established a separate schedule for CMRS provider portability.

2.1.2   All cellular, broadband PCS, and covered SMR carriers are ordered to have the capability of querying appropriate number portability database systems in order to deliver calls from their networks to ported numbers anywhere in the country by December 31, 1998[4].

---

[1] *First Report and Order and Further Notice of Proposed Rulemaking*, CC Docket No. 95-116 (LNP Order). On March 11, 1997, the FCC released a *First Memorandum Opinion and Order on Reconsideration*, in which the LNP deployment periods for the first two (2) implementation phases were extended.

[2] Id. At ¶ 153.

[3] Id. At ¶ 155.

[4] First Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd. 8352 (1996) ¶ 165.

All cellular, broadband PCS, and covered SMR carriers are ordered to offer service provider portability throughout their networks, including the ability to support roaming, by June 30, 1999[5]. Further, the FCC delegated authority to the Chief, Wireless Telecommunication Bureau, to waive or stay these dates, as deemed necessary to ensure the efficient development of number portability, for a period not to exceed nine (9) months[6]. A request for such relief was filed by the Cellular Telecommunications Industry Association (CTIA) in its November 24, 1997 Petition for Extension of Implementation Deadlines. In addition, on December 16, 1997 CTIA requested the FCC to abstain from enforcing the June 30, 1999 implementation deadline at least until the five (5) year buildout period for PCS carriers expires. These petitions are currently under consideration by the Chief, Wireless Telecommunication Bureau.

2.2   **Accountability of the Wireless Wireline Integration Task Force to the LNPA WG.** The FCC established the North American Numbering Council (NANC), a federal advisory committee, and directed NANC to make several specific determinations regarding the selection of LNPA vendors, the overall national architecture, and technical specifications for regional databases. The NANC established the LNPA Selection Working Group and two subgroups, including the LNPA Architecture Task Force, to review and make recommendations on these issues. The LNP Architecture Task Force developed the LNPA Architecture & Administrative Plan, which was forwarded to the FCC on May 1, 1997, as an attachment to the LNPA Selection Working Group Report. This report made recommendations concerning LNP architecture, including endorsing a regional LNPA structure. The report and attachments were released by the FCC for public comment followed by release of the LNP Second Report and Order in CC Docket No. 95-116, on July 27, 1997. In this order, the FCC adopted all of the recommendations made in the LNPA Selection Working Group Report, including those contained in the LNP Architecture & Administrative Plan. These recommendations included selection of LNPA vendors by region, the process used to make these selections, the specific duties of the LNPAs, the geographic coverage of the regional databases, and adoption of technical standards.

2.3   **Future Role of the LNPA Working Group.** Section 7, Future Role, of the LNPA Selection Working Group Report outlined seven (7) areas

---

[5] First Report and Order and Further Notice of Proposed Rulemaking, CC Docket No. 95-116 (LNP Order) ¶ 166.
[6] Id. At ¶ 167.

relating to future LNP implementation activities, including integration of wireless in LNP. This was necessary as the original report was developed from a wireline only perspective. In June 1997, the LNPA Working Group established a subgroup to develop a work plan for accomplishing the integration of wireless into LNP, as well as to address several other of the areas defined in the Future Roles section of the report. This activity lead to the formation of the Wireless and Wireline Integration Task Force (WWITF). The WWITF, which is opened to all parties and is representative of all segments of the telecommunications industry, was chartered to make recommendations on the following areas from the FCC's Second Report and Order.

2.3.1 Modifications to the NANC Functional Requirements Specifications (FRS), which defines the requirements for the NPAC/SMS, as necessary, to support wireless number portability[7].

2.3.2 Modifications to the NANC Interoperability Specifications (IIS), which defines the requirements for the mechanized interfaces with the Number Portability Administration Center (NPAC) Service Management System (SMS), as necessary, to support wireless number portability[8].

2.3.3 Monitor industry efforts to develop technical solutions for implementing wireless number portability[9].

2.3.4 Develop wireless recommendations to the FCC no later than nine (9) months after release of the Second Report and Order (i.e., May 18, 1998)[10].

SECTION 3   WIRELESS WIRELINE INTEGRATION ISSUES

3.1   Rate Center Issue

3.1.1 Issue: Differences exist between the local serving areas of wireless and wireline carriers. These differences impact Service Provider portability with respect to porting both to and from wireline and wireless service providers. These differences, resulting in an impact called "disparity", exist with the current architecture, making it impossible for some wireless subscribers to port to

---

[7] Second Report and Order in CC Docket No. 95-166, ¶ 61.
[8] Id. At ¶ 64.
[9] Id. At ¶ 92.
[10] Id. At ¶ 91.

wireline carriers. This disparity is based on the Architecture Task Force recommendations, which were subsequently adopted by the FCC in the Second Report and Order. In the Second Report and Order the FCC recommended that the geographic scope of Service Provider portability be limited to the wireline-established rate centers due to technical limitations associated with proper rating. Also in the Second Report and Order the FCC recognized these recommendations addressed wireline requirements and did not reflect wireless needs.

3.1.2   Discussion: The fundamental difference between wireline and wireless service is:

> Wireline service is fixed to a specific location. The NPA-NXX portion of the subscriber's telephone number is associated with a specific geographic rate center, and the subscriber's service must be sited within that rate center's geography.

> Wireless service is mobile and not fixed to a specific location. While the wireless subscriber's NPA-NXX is associated with a specific geographic rate center, the wireless service is not limited to use within that rate center.

> Consequently, if a wireless subscriber's NPA-NXX is outside of the wireline rate center where they wish to port they will not be able to port their number.

> Within the WWITF, there is a lack of consensus whether the difference constitutes a lack of competitive parity. The WWITF escalated this issue to the NANC. The two rate center positions and the background information (the wireline and wireless reports) were presented to the NANC and are included in Appendix D.

3.1.3   Solution: Consensus was not reached at the WWITF/LNPAWG on a solution to this issue. The issue was therefore escalated to the NANC on February 18, 1998. A letter was subsequently written to the Local Number Portability Working Group directing it to complete its work regarding the standards and procedures necessary to provide for CMSR provider participation in Local Number Portability for submission to the Federal Communications Commission on or before May 18, 1998.

3.1.4   A copy of the rate center disparity documentation that was forwarded to the NANC as well as the return correspondence from the NANC Chair is in Appendix D.

3.2   Request for Service Provider Portability

3.2.1   Issue: With number portability cellular, broadband PCS, and covered SMR providers must make available upon request to other carriers lists of there switches for which number portability has and has not been requested.[11]

3.2.2   Discussion: CTIA has sponsored a series of Subject Matter Expert (SME) workshops on wireless number portability to examine the impacts of the Federal obligation.

3.2.3   Solution: CTIA considered several alternatives available to cellular, broadband PCS, and covered SMR providers that are under the FCC order.   The alternatives considered are for each affected service provider to satisfy its obligation individually or to establish a third party to provide the information clearinghouse functions necessary to satisfy the federal requirement.   The conclusion is establishing a third party for information clearinghouse activity may provide a desired efficiency.

CTIA is currently refining the details of the function to be provided by the third party information clearinghouse.   If the third party is established for providing the information clearinghouse function, this may be an alternative mechanism for requesting service provider to obtain switch and NXX information and to make request for number portability deployment.

3.3   Provisioning

3.3.1   Issue: The existing wireline inter-service LNP operations flows do not meet the needs of the wireless service providers.

3.3.2   Discussion: CTIA sponsored a Subject Matter Expert Workshop on Inter-Service Provider Communication.   The scope of this effort was to focus on the functions required to support inter-service provider communication.   This includes provider-to-provider communication, and provider-to-NPAC/SMS communication.   The Workshop evaluated the wireline processes,

---

[11] FCC First Memorandum Opinion and Order on Reconsideration, FCC 97-74, CC Docket No. 95-116, para. 137 and Rule 52.31 (a) (1).

including the Ordering and Billing Forum (OBF) Local Service Request forms, NPAC/SMS communication, and Operational Flows to determine their applicability to the wireless industry.

3.3.2.1 Although several recommendations are made in the Workshop Report, two have major significance. The WWITF adopted these two recommendations with modifications. The first of these recommendations proposes a two phased approach to the implementation of inter-carrier communication to support Wireless Number Portability. The first phase involves using the Local Service Request Process defined by the Ordering and Billing Forum including the following LSR forms: The Local Service Request Form; End User Information Form; Number Portability Form, and Local Service Request Confirmation Form. The second phase would involve eliminating the LSR process only when porting from a wireless to a wireless carrier by implementing an automated solution through the NPAC/SMS interface.[12] The primary reason for removing the LSR from the wireless to wireless porting process is to reduce the number of steps required to port a subscriber. In turn, this can reduce the length of time required to port a subscriber.

3.3.2.2 A fundamental part of the proposal was to eliminate carrier-to-carrier communications to streamline the wireless porting process. The elimination of the LSR from the wireless porting process is thought to have a major benefit of reducing the overall time and cost of porting a subscriber. A recommendation to implement the second phase would be subject to a feasibility/cost study, followed by acceptance of the industry (WWITF). This cost study will be completed in conjunction with the feasibility on the NPAC/SMS changes and wireless SOA interface changes required for phase II.

If the outcome of the feasibility study indicates that the recommended NPAC/SMS changes for implementation of inter-carrier communication is favorable, the wireless industry does not want to put the NPAC/SMS system enhancements on the critical path to launching wireless number portability. Rather, the wireless industry wants to pursue the NPAC/SMS changes in parallel with its preparation to introduce number portability. The wireless industry will use the existing wireline LSR process until the associated NPAC/SMS changes can be delivered. If the

---

[12] This second recommended phase is different than CTIA's Inter Service Provider Portability Workshop recommendations. That group recommended the elimination of the LSR for all porting to or from a wireless carrier, whether with a wireline or wireless carrier.

NPAC/SMS changes can be completed in time for wireless number portability launch then wireless carriers would disregard the LSR process and implement number portability between wireless carriers using the NPAC/SMS enhancements. Wireless carriers could continue to use the existing LSR process for wireline/wireless porting.

3.3.2.3 The second CTIA recommendation from the Subject Matter Workshop on Inter-Service Provider Communication proposes changing the porting intervals when porting from a wireless carrier to a wireless carrier to include a Firm Order Confirmation (FOC) response of 30 business minutes, and two (2) business hours for the porting process. Therefore, the timeframe to complete a wireless to wireless port is two and one half business hours. The NPAC SMS contains timers that allow a port to proceed even in the absence of concurrence from the old service provider. In addition, the NPAC SMS contains a conflict period that allows for holding a pending port for a defined timeframe before the due date. Under certain conditions a service provider may use this process to place a pending port into a conflict state of six (6) business hours. If the conflict is not resolved between the service providers at the end of the conflict period, the port may proceed at the discretion of the new service provider. These reduced porting intervals do not consider impacts on resellers of wireless services.

3.3.2.4 For ports from wireline to wireless, wireless service providers desire reduced porting intervals from those currently used by the wireline segment of the industry. The current porting intervals for wireline include a maximum of one (1) day for the FOC process and three (3) days for the porting process. Wireline ports may be accomplished in less time when conditions are optimal, however, the timeframes were established to support the complex systems and work processes of all the wireline service providers. A variety of systems are used during the porting process including, but not limited to the following:

LSR/FOC Systems – Automated processing of inter-service provider communications

Service Order Systems –Initiates the service orders to begin the porting process

Inventory Systems – Manages the distribution and assignment of equipment and telephone numbers

Work Force Assignment Systems – Schedule assignments to accomplish any facilities work.

Billing Systems – Updates records required to ensure accurate billing

Maintenance Systems – Updates records required to enable quality trouble resolution

Switch Administration Systems – Modifications to switch translations and to activate ten (10) digit triggers

E911 Systems – Updates records to ensure accurate data

The above systems were individually designed and developed by each wireline service provider. Generally speaking, these systems operate in a batch environment that requires at least a twenty-four hour timeframe to process updates. Porting intervals were negotiated during 1996 and 1997 by the entire wireline industry segment to allow for differences in processing parameters of these systems.

3.3.2.5 The one (1) day LSR/FOC process and the three (3) day porting interval were negotiated by the wireline carriers in order to accomplish all of the system updates and any physical work required to accomplish the port. For example the batch service order process used by wireline carriers results in the need for the one (1) day LSR/FOC process. In addition, during the confirmation process where large business customers are involved, some service providers may elect to determine that the party requesting the port is authorized to make such a request. During the three (3) day porting timeframe it is critical to complete the translations work and/or to activate the ten digit trigger through a batch update in order to enable routing calls to ported customers.

3.3.2.6 The other systems described in Paragraph 3.3.2.4 above operate in a batch environment at virtually all wireline service providers. The records maintained in these systems are critical to insure accurate and timely billing, quality trouble resolution, accurate call routing, timely completion of the porting process, and accurate E911 records. During the long and contentious negotiations to establish wireline porting intervals, the wireline industry established the three (3) day porting timeframe in order to accommodate the existing systems and work processes of all service providers.

3.3.2.7 There has been no significant porting experience to date in the wireline industry. These timeframes were established as a starting point with possible revisions in the future should conditions warrant change. It was determined that a cautious approach was wise in order to develop a quality porting process to avoid negative customer impact. Therefore the one (1) day LSR/FOC and three (3) day porting intervals were adopted by the wireline industry.

3.3.3   Solution: The two recommendations described above, which were established on the basis of the current wireless business model that allows for provision of service in a matter of minutes, are addressed below.

3.3.3.1 To address the first recommendation , elimination of the LSR/FOC process, the wireless industry segment requests a feasibility study to identify costs and timeframes to implement the changes necessary to replace the LSR/FOC process. The wireless service providers plan to use the existing LSR/FOC process if a replacement is not available by the time wireless portability is implemented.

3.3.3.2 The second recommendation, reduction of porting intervals, is being addressed from two perspectives. For ports between wireless carriers, an NPAC SMS change order was developed by the LNPA Technical and Operational Requirements (T&O) Task Force that proposes changes to the existing NPAC SMS timers. This change will provide the same level of support in the NPAC SMS for wireless to wireless ports as exists today for wireline to wireline ports. Further description of this and other NPAC SMS changes is described in Section 6 following.

3.3.3.3 The wireless industry considers the initial wireline porting timeframes acceptable for ports from wireless to wireline. However, wireless service providers desire reduced porting intervals when porting from a wireline to a wireless carrier. Before a determination to shorten porting intervals can be considered, the wireline industry recommends that an analysis be performed to evaluate the impacts of actual porting experience on systems and work processes effected by proposed shortened porting intervals. It is necessary to gather sufficient porting data to complete this analysis. In addition to evaluating porting experience, the analysis will consider several other issues such as competitive parity to insure equal treatment by all service providers in the porting process. The wireless and wireline service providers will jointly evaluate certain operational issues such as different treatment of holidays and different hours of operation between the two industry

segments. Finally, the wireless carriers will evaluate the impacts of the porting process on wireless resellers. In order to accomplish this analysis, the LNPA Working Group developed the following high level work plan:

The WWITF will work during the remainder of 1998 to review systems and work processes in order to determine the reduction in porting interval from wireline to wireless carriers. Monthly discussions will take place at the LNPA Working Group meetings. Monthly status reports will be made to NANC with the final recommendation presented to NANC no later than December 31, 1998

3.3.3.4 With any change in the wireless number portability implementation date NANC reserves the right to review time frames and processes stated in Section 3.3.3.3.

SECTION 4   WIRELESS SPECIFIC ISSUES

4.1   **Background Information: Mobile Identification Number (MIN)/Mobile Directory Number (MDN) Separation for MIN based providers (e.g., TDMA, CDMA, AMPS)**

4.1.1   The separation of the MIN and MDN refers to the administration and processing of the Mobil Identifier Number (MIN) independently from the Mobile Directory Number (MDN). The former is a number used to uniquely identify the mobile set to the network while the latter is the telephone number that is dialed to reach the mobile set. Prior to WNP, those wireless carriers that relied on MINs for terminal identification often relied on the assumption that the MIN was the same value as the telephone number. Thus, within the network elements and within the operation support systems, the values were used interchangeably.

4.1.2   With the advent of number portability, the industry consensus was to separate these values allowing the customer to specify the MDN when they port and the new service provider specifying the MIN. With this architecture, some systems are retained with little impact while other systems are significantly impacted.

4.1.3   Roaming is an integral part of wireless service. It allows a wireless carrier to provide service for subscriber when they are outside of their "home system". This is accomplished by means of business

agreements between the roaming carrier and their home carrier. The process of roaming begins when the subscriber ("roamer") powers on their mobile station. The mobile station sends their MIN value to the serving switch which then sends a registration notification message to the home system. This request is routed through signaling networks using the MIN value. The home system acknowledges the request, usually indicating that service should be provided, assuming the customer is valid and authorized.

4.1.4   Prior to portability, the Wireless Service Provider (WSP) could assume that the MIN value sent by the Mobile Station was the same as its MDN. The serving switch requires the MDN to populate the Calling Party Number parameters in signaling and billing records. If the subscriber has ported, the MIN will not be the same as the MDN and using the MIN as the calling party number is incorrect. Services which rely on the information will not function properly. These include:

- automatic callback, calling number, and calling name delivery;
- the incorrect callback number is delivered on E911 calls;
- the incorrect calling party number is used for toll billing by the interexchange carriers;
- the incorrect calling party number is used for billing records;
- the incorrect calling party number is used to bill for various operator services (e.g. DACC).

4.1.5   To rectify this situation, the home WSP should return the MDN associated with the MIN upon registration. The IS-41C protocol does allow a parameter to be returned as an optional parameter, but support is limited by equipment vendors.

4.1.6   The impact affects any area in which a subscriber can roam. This includes U.S., Canada, Puerto Rico, U.S. Virgin Islands, Guam, and any other area included in the North American Numbering Plan. Consequently, all areas would have to simultaneously support the signaling enhancements upon registration to avoid this problem.

4.2   **GSM Based Providers.** For GSM, there already exists a separation between the dialed number, the MSISDN, and the routing number, the IMSI. The IMSI allows for location updates and feature interaction. The MSISDN allows for subscriber mobile originations and call delivery.

Billing for calls traversing the GSM network can be setup based on IMSI and/or MSISDN depending on the call scenario. Thus, GSM does not have the same national roaming impacts resulting from use of MIN as the mobile identifier. There may be impacts if utilizing dual mode operations.

4.3   **E911.** The impacts to E911 are related to the roaming impacts described above. Currently, the MSC assumes the MIN value sent by the mobile station on registration is the same as the MDN. While the MIN is a 10 digit number which may have the same format as a telephone number, it is not the same as the telephone number for a ported subscriber. Consequently, if the MIN is delivered to the PSAP for a ported subscriber, that value cannot be used to callback the subscriber.

4.4   **Short Messaging Service**

    4.4.1   Short Messaging Service (SMS) allows the transfer of a limited amount of text information to/from a wireless mobile station. The routing of information is based on the destination's called party number and is based on the use of the SS7 infrastructure.

    4.4.2   Currently, a translation type exists for mapping a MIN value to the appropriate route information for SMS applications. With the advent of number portability, the MIN value is no longer appropriate since the originator of the message is unlikely to be aware what the destination MIN value is. Two options have been identified:

- redefine the current translation type for mapping the MDN for SMS application,
- create a new translation type for mapping MDN for the SMS application.

    4.4.3   No recommendation is offered herein, rather it is expected the appropriate experts in the ANSI accredited standards groups will define the appropriate course of action.

    4.4.4   Since SMS requires that a message be delivered to the appropriate mobile subscriber, it is necessary to determine the current service provider associated with a specific directory number. One method of facilitating this is to upload the SMS routing addresses (Global Title Address -GTA) for each ported subscriber in the NPAC. The NPAC would then disseminate this for inclusion in the NP-DB. This information would have the same attributes and NPAC procedures as defined for Global Title Addresses associated with:

- Calling Name Delivery (CNAME)
- Line Information Data Base (LIDB)
- CLASS services
- Intersystem Voicemail/Message Waiting Indication (ISVM/MWI)

4.4.5   It should be noted that an alternative method was identified to deliver SMS without requiring this information to be included in the NP-DB. However, given that the wireline networks have settled on the architecture which relies on the NPAC broadcasting the GTA information, some benefit was seen in preserving the same architecture for the wireless SMS application.

SECTION 5 ARCHITECTURE AND ADMINISTRATION PLAN FOR LOCAL NUMBER PORTABILITY

5.1   The Architecture and Administration Plan For Local Number Portability (the Plan) was initially developed by the NANC LNP Architecture Task Force, under the NANC Selection Working Group. The Plan was forwarded to the FCC on May 1, 1997 as an attachment to the LNP Selection Working Group Report. The FCC in the LNP Second Report and Order accepted all of the recommendations contained in Issue 1, Revision 3, dated April 25, 1997 of the LNP Architecture and Administration Plan. One of the future activities listed in section 7 of the Plan was the integration of wireless into LNP, since the original report was drafted from a purely wireline perspective. The WWITF was subsequently formed to make, in part, recommendations on the necessary changes to the LNP Architecture and Administration Plan, which are summarized below.

- Reference to the LNP Second Report and Order, noting the creation of seven number portability database regions (plus Canada), Lockheed Martin and Perot System[13] as database administrators, the responsibility of the N-1 carrier to perform the appropriate LNP data queries, the need to integrate CMRS providers into LNP, the interim acceptance of the already established LLC's under NANC, continue the management and oversight of the LNP administrators, NANC would provide

---

[13] Subsequent to the endorsement of the two LNPA administrators, the LLC contracts with Perot Systems Inc. were terminated in February 1998, and Lockheed Martin IMS became the administrator in all seven regions.

national oversight of LNP administration, and the creation of a committee chaired by the Chief of the Common Carrier Bureau to oversee the introduction of LNP in the top 100 markets. (Section 1)

- The High Level LNP Process view was updated to more accurately indicate the LSR process to show the separation of the SOA and LSMS platforms, and to include reference to a Mobile Switching Center (MSC) and wireless terminals. (Section 4)

- A brief history of the activity leading up to the development of the LNP Architecture and Administration report and the formation of the WWITF, and its mandate. (Section 5)

- A note was added about the requirement for IS-41 based wireless carriers to make network upgrades to support the separation of the Mobile Identification Number (MIN) and Mobile Dialed Number (MDN) which is required to support LNP. These network changes must be made even in markets where numbers will not be ported. (Section 6)

- The service provider definition was changed to include CMRS providers. (Section 7.1)

- The LNPAWG recommended solution for number portability with high volume call-in number (choke network) was noted. (Section 7.13)

- The LNP porting assumptions between wireline and wireless carriers agreed upon in the WWITF were included. (Section 7.14)

- The NPAC regions were updated to include the states in each regions. (Section 9)

- The NPAC/SMS user criteria was modified to include access to address public safety concerns. (Section 12.2.4)

- Wireless call scenario's were identified and added to the report. (Attachment A)

5.2   **See Appendix C** for the complete "Architecture & Administrative Plan for Local Number Portability" report.

SECTION 6 LNPA TECHNICAL & OPERATIONAL REQUIREMENTS TASK FORCE REPORT

6.1   The Cellular Telecommunications Industry Association's (CTIA) Inter Service Provider Portability Workshop adopted a leadership role to develop an LNP plan for the wireless segment of the industry. During the

last quarter of 1997 and the first quarter of 1998 the focus of the CTIA workshop was to develop the business needs required to provide LNP between wireless carriers as well as between wireless and wireline carriers. CTIA released its report titled *Subject Matter Expert Workshop Inter-Service Provider Communication Report* on February 4, 1998 and a read out of their results was presented to the LNPA Wireless and Wireline Integration Task Force (WWIFT) on February 9, 1998. The CTIA workshop recommended that WWITF request the LNPA Technical and Operational Requirements (T&O) Task Force to investigate the feasibility of Number Portability Administration Center (NPAC) Service Management System (SMS) modifications to support wireless LNP business requirements. WWITF accepted the recommendations in Section 6.5 of the CTIA report, which contained the business requirements, and presented these recommendations to the LNPA T&O Task Force at their February 12, 1998 meeting.

6.2   The LNPA T&O Task Force developed a timeline of activities necessary to accomplish the requested changes to satisfy the FCC requirement for wireless carriers to provide LNP by June 30, 1999. The LNPA T&O Task Force timeline included activities intended to define the business needs, develop the associated requirements for the systems and applicable interfaces, and prepare a recommendation to the Limited Liability Companies (LLCs) to request the changes from the NPAC SMS vendor (i.e. Lockheed Martin, IMS).

6.3   The LNPA T&O Task Force developed the business requirements and change orders during special task force meetings during March 1998 and the detailed requirements were developed in April and May 1998. Three (3) change orders and associated requirements were developed to satisfy the WWITF request to support business needs for porting between wireless carriers. These change orders are described in Sections 6.4 through 6.6 below. One additional change was requested by WWITF and the LNPA T&O Task Force will handle this request as described in 6.7 through 6.9 below.

6.4   The WWITF requested NPAC SMS timers to support wireless to wireless porting. The existing timers are used by the wireline industry segment to support the flow of porting through the NPAC process. WWITF recommends a reduction in the overall porting timeframe currently used by wireline. In order to support this wireless need, a change order was developed that requests development of four (4) sets of timers that contain tunable values to define concurrence intervals for porting that are easily changed based on business needs. This allows for timers to support wireless to wireless ports, wireline to wireline ports, wireless to wireline

ports and wireline to wireless ports. In addition, it provides a foundation to address future industry needs.

6.5   The WWITF requested that NPAC system and center business hours be defined to uniquely address the needs for wireless to wireless porting. A change order was developed to request the addition of Saturday as a business day and to increase the NPAC daily business hours. These business hours are tunable to address individual regional requirements. WWITF supports the holidays currently defined by the NPAC.

6.6   The WWITF requested that the NPAC SMS be modified to include a new set of Destination Point Codes (DPC) and Sub System Number (SSN) information in support of wireless Short Message Service. A change order was developed to include this information in the subscription version received from the Service Order Activation (SOA) systems, stored on the NPAC SMS, and sent to the Local Service Management System (LSMS) for wireless to wireless porting.

6.7   The WWITF recommends that the inter-service provider communication process designed by the wireline industry segment be replaced for wireless portability. The wireline process includes a communication vehicle titled the Local Service Request (LSR). The LSR initiates the communication between the old and new service providers and supports the information exchange required to port customers. The wireless industry segment plans to use this process as an interim measure, however since the process does not currently exist between wireless service providers, a replacement process is requested. The recommendation from WWITF is to replace the LSR process with a modification to the NPAC SMS to communicate customer name and address information. The LNPA T&O Task Force believes that the WWITF recommendation to replace the LSR process by enhancing the existing LNP systems and processes to use customer name and address as the inter-service provider communication channel is inconsistent with the First Report and Order and Further Notice of Proposed Rulemaking, CC Docket No. 95-116, July 2, 1996 (LNP Order). In Paragraph 99 of the LNP Order, the FCC states "We believe that at this time the information contained in the number portability regional databases should be limited to the information necessary to route telephone numbers to the appropriate service providers. To include, for example, information necessary to provide E911 services or proprietary customer specific information would complicate the functions of the number portability databases and impose requirements that may have varied impacts on different localities".

6.8   Discussion of the proposal to replace the LSR process occurred at the
April 21, 1998 NANC meeting. The following three (3) options were
discussed as possible solutions to the issue:

Option 1 - Modify the existing LSR process – The LSR process designed
for use by the wireline industry is overly burdensome for the wireless
industry as much of the information required on the various forms used in
the process is not relevant to a wireless service provider. The Ordering
and Billing Forum (OBF), the industry organization responsible for
developing and maintaining the LSR process, is willing to consider
modifications to meet the ordering requirements of the wireless service
providers. However, the wireless carriers, who do not currently use the
LSR process, believe that it is too cumbersome and costly to implement
and does not adequately support the porting intervals required for wireless
ports. Therefore, a replacement process is recommended by the wireless
industry.

Option 2 - Modify the existing LNP systems to act as the inter-service
provider channel – This proposal was made by the CTIA to modify the
NPAC SMS to communicate customer name and address information.
This involves the new service provider sending customer name and
address information regarding the port via the standard interface to the
NPAC SMS. The NPAC SMS then transmits a notification message
containing name and address and other information pertaining to the port
to the other involved service provider via the standard interface. This acts
as the notice to the old service provider that a customer requested a port.
The old service provider then follows the current process to provide
concurrence to the port. This proposal requires development by the
wireless industry of a process to input the customer name and address and
other porting information, as well as the process to use this information by
the old service provider following receipt of the data. In addition,
modifications to the standard interface between the various LNP systems
is required to accommodate the name and address information. Finally,
modifications are required to the existing NPAC SMS developed and
maintained by Lockheed Martin, IMS and to all the various interface
systems currently used by the service providers involved in porting today.
Further study is required to determine the magnitude of the impacts to the
existing LNP systems.

Option 3 - Develop a stand alone inter-service provider communication
channel – This proposal recommends development of a stand alone system
to perform all of the functions identified in the CTIA proposal described
above. This removes the NPAC SMS from the process, satisfying the
LNPA T&O Task Force concern regarding use of the NPAC SMS for
transmission of customer name and address information. The

recommendation requires development of a new system to perform the inter-service provider communication process. It also requires new interfaces with the involved service providers, and new processes at the wireless service providers to use the system.

6.9 Following lengthy discussion at the NANC meeting, a recommendation was made to investigate development of a capability that uses some concepts from Option 2 and some from Option 3. Further study is required to develop processes and system requirements to provide both the data source and input procedures for the interface and for the use of the port notification message delivered to the service provider. The LNPA T&O Task Force will then request a feasibility study from Lockheed Martin, IMS and will request input from the various interface vendors to develop these system capabilities.

6.10 The LNPA T&O Task Force plans to complete the NPAC SMS requirements in May 1998, followed immediately by a recommendation to the LLCs for a Statement of Work from Lockheed Martin, IMS. The change orders described in 6.4 through 6.6 above are considered essential by WWITF to the successful introduction of wireless portability. Therefore, the recommendation to the LLCs will include the need to obtain these modifications to accommodate the June 30, 1999 implementation of wireless portability. The change described in 6.7 through 6.9 above to replace the LSR communication process for wireless portability is considered by WWITF as a second phase requirement, and its implementation is dependent on the results of the feasibility study requested by the LNPA T&O Task Force and the work directed by the WWITF to make use of the system enhancements.

SECTION 7 LNPAWG ISSUES AND SUMMARY OF RECOMMENDATIONS

7.1 Recommendations

7.1.1 The wireless industry will complete a feasibility study to replace or modify the LSR process for wireless to wireless porting. Refer to Sections 3.3.3.2, 3.3.2.2, and 6.7 to 6.9 of the report.

7.1.2 Recommend reduced porting intervals for wireless to wireless porting to be 30 business minutes for FOC and 2 business hours for the porting process through the NPAC/SMS. Many wireless carriers believe that changes are required to the NPAC/SMS to support these reduced maximum time intervals. It should be noted

that some wireless and wireline service providers did not agree with the need for NPAC changes as the existing NPAC capabilities would accommodate these porting intervals. Refer to Sections 3.3.2.3, 3.3.3.2, and 6.4 of the report.

7.2 Open Issues

7.2.1 This report does not consider LNP impacts on resellers. Analysis of the impacts will be studied during the last half of 1998. Monthly discussions will take place at the LNPA Working Group meetings. Monthly status reports will be made to NANC with the final recommendation presented to NANC no later than December 31, 1998. Refer to Section 3.3.3.3.

7.2.2 Nation Wide Roaming cannot be supported unless MIN/MDN separation is implemented by all MIN based wireless systems (not just those in the top 100 MSAs) prior to the start of wireless number portability. Refer to Section 4.1 of the report for complete details.

The resolution of nation wide roaming is required for the following services:
- automatic callback, calling number, and calling name delivery;
- the incorrect callback number is delivered on E911 calls;
- the incorrect calling party number is used for toll billing by the interexchange carriers;
- the incorrect calling party number is used for billing records;
- the incorrect calling party number is used to bill for various operator services (e.g. DACC).

7.2.3 Consensus was not reached on porting between wireline and wireless carriers. Please refer to Section 3.1 Rate Center Issue and Appendix D. If the FCC chooses to address any potential public policy issues associated with the rate center issues, the industry may need to revisit some of the wireless wireline integration requirements.

7.2.4 Short Message Service is impacted by LNP because the current service provider associated with a specific directory number must be determined to properly deliver the message to a mobile subscriber. Alternative solutions to delivery of Short Message Service in an LNP environment are being evaluated at various

ANSI accredited standards groups. Depending on the Short
Message Service solution(s) approved, additional translation types
or other modifications to the NPAC/SMS may be required. Refer
to Section 4.4 of the report for complete details.

SECTION 8   DEFINITIONS

AMPS	Advanced Mobile Phone System
ANSI	American National Standards Institute
CDMA	Code Division Multiple Access
CLASS	Custom Local Area Signaling Services
CMRS	Commercial Mobile Radio Service
CNAME	Calling Name Delivery
CTIA	Cellular Telecommunications Industry Association
DACC	Directory Assistance Call Completion
FCC	Federal Communications Commission
FOC	Firm Order Confirmation
FRS	Functional Requirements Specifications
GSM	Global Standard for Mobile communication
GTA	Global Title Address
IIS	Interoperability Specifications
IMSI	International Mobile Station Identifier (E.212)
ISVM/MWI	Intersystem Voicemail/Message Waiting Indication
IS-41	Interim Standard 41
LNPA-T&O	Local Number Portability Administration- Technical and Operations group
LNPA-WG	Local Number Portability Administration-Working Group
LEC	Local Exchange Carrier
LIDB	Line Information Data Base
LNP	Local Number Portability
LSR	Local Service Request
MDN	Mobile Directory Number
MIN	Mobile Identification Number
MSA	Metropolitan Statistical Area
MSC	Mobile Switching Center
MSISDN	Mobile Station Integrated Service Digital Network Number (E.164)
NANC	North American Numbering Council
NP	Number Portability
NPAC	Number Portability Administration Center
NPAC-SMS	Number Portability Administration Center-Service Management System

NPDB	Number Portability Database (contains associations between ported numbers and LRNs)
NXX	Office Code
PCS	Personal Communications Service
PSAP	Public Safety Answering Point
OBF	Ordering and Billing Forum
Rate Center	A uniquely defined geographical location within an exchange area for which mileage measurements are determined for the application of interstate tariffs.
SME	Subject Matter Expert
SMR	Specialized Mobile Radio
SMS	1) Service Management System (usually LSMS) 2.) Short Message Service
SOA	Service Order Administration
SS7	Signaling System Seven
TDMA	Time Division Multiple Access
WNP	Wireless Number Portability
WSP	Wireless Service Provider
WWITF	(LNP) Wireline/Wireless Integration Task Force